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10/549,350	09/14/2005	Efthimios Tsiliaoukas	DE 030086	6730
65913	7590	08/13/2007	EXAMINER	
NXP, B.V.			HAM, SEUNGSOOK	
NXP INTELLECTUAL PROPERTY DEPARTMENT				
M/S41-SJ			ART UNIT	PAPER NUMBER
1109 MCKAY DRIVE			2817	
SAN JOSE, CA 95131			NOTIFICATION DATE	DELIVERY MODE
			08/13/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary

Application No.

10/549,350

Applicant(s)

TSILIAOUKAS, EFTHIMIOS

Examiner

Seungsook Ham

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/14/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

In the specification, page 1, line 26, "US-A-2000/0093400" should be corrected to
–US-A-2002/0093400--; and

Page 6, lines 1 and 2, "The order of the filter therefore corresponds to half the
number of microstrip sections" cannot be understood.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being
indefinite for failing to particularly point out and distinctly claim the subject matter which
applicant regards as the invention.

In claim 1, lines 3 and 4, the term, "one resonator" is used twice and leads to
confusion as to whether it refers to the same resonator; line 10, "wherein each
resonator (16,18) the capacitor assembly is..." cannot be understood (is there a ","
between "resonator" and "the capacitor assembly"?); lines 11 and 16, "in each case" is
confusing as to what the phrase refers to; line 12, "exclusively connected" is confusing
as to what is meant by "exclusively"; and lines 16-20 are confusing as to how each
microstrip section in resonators are coupled to each other, (e.g., how "a further
resonator" is related to "one resonator" recited in lines 3 and 4?).

In claim 6, "in each case" is confusing; "exclusively electromagnetically" is confusing as to what is meant by "exclusively"; and it is unclear as to whether "a further resonator" refers to the same "further resonator" recited in claim 1.

In claim 7, "there is a filter response of an order that corresponds to *half the number* of microstrip sections of the resonators" cannot be understood.

In claims 9 and 10, it is unclear as to how "a first resonator" is related to "one resonator" recited in claim 1.

In claim 10, last line, it is unclear as to what "the latter" refers to.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giraudeau et al. (US '759) in view of Wang (US '538).

Giraudeau et al. (fig. 2) discloses a filter circuit comprising: input/output 3; at least two resonators 10 which are electromagnetically coupled; the first ends of the resonators are connected to a ground 4 and the second ends of the resonators are connected to a variable capacitor 5.

Regarding claim 10, Giraudeau et al. also shows first and second coupling microstrip 2 coupled to the input 3 and the first resonator 10 in a right angle.

Giraudeau et al. does not show each resonator can be comprised of two microstrip sections and a capacitor assembly.

Wang (figs. 3-5) discloses a resonator comprised to two microstrip lines which have the same length L11 & L12, L21 & L22, L31 & L32 and a capacitor C1, C2, or C3 to reduce the size of the filter device (col. 1, lines 60-65). Each microstrip line/section is disposed on a front side of an insulating substrate (see fig. 5) and a conductive layer SG on the rear side of the insulating substrate, and a microstrip line/section is connected to a ground through a through-connection XR. Moreover, Wang addresses the problem of size using a single microstrip resonator (fig. 2a, 2b, col. 1, lines 32-53). Furthermore, Wang (fig. 3) shows each microstrip line is electromagnetically coupled to the other microstrip line (see the coupling between L11 and L22, L21 and L32).

It would have been obvious to one of ordinary skill in the art to substitute each resonator 10 with two microstrip sections with a capacitor in the device of Giraudeau et al. in order to reduce the size of the filter as taught by Wang.

Regarding claim 4, Note that Giraudeau et al. discloses a variable capacitor 5. Using a voltage controlled variable diode with a high impedance resistor is considered as an obvious design modification since both variable capacitor and the voltage-controlled variable diode are functionally equivalent.

Regarding claim 9, Wang (fig. 5) also discloses a coupling microstrip (port1) intersects a microstrip line (i.e., the coupling microstrip is directly connected to the microstrip line). It would have been obvious to one of ordinary skill in the art to provide

a coupling microstrip between the input and a microstrip line in the modified device of Giraudeau et al. for direct coupling.

Claims 1- 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konishi et al. (US '999) in view of Wang (US '538).

Konishi et al. (fig. 1) discloses a filter circuit comprising: input and output 1, 7; at least two resonators; each resonator having a straight microstrip section 4 or 5, and a capacitor assembly 8&10 or 9&11, one end of the microstrip section is grounded, and the other end is coupled to a capacitor assembly; and each microstrip section is electromagnetically coupled (see col. 5, lines 14-32).

Konishi et al. does not show each resonator having two parallel microstrip sections.

Wang (figs. 3-5) discloses a filter circuit having each resonator comprised of two parallel microstrip sections (which have the same length) L11 & L12, L21 & L22, L31 & L32 and a capacitor C1, C2, or C3 to reduce the size of the filter structure (col. 1, lines 60-65). It should be noted that the microstrip sections 4, 5 in the device of Konishi et al. is functionally equivalent (i.e., a microstrip inductor) to a pair of microstrip sections (e.g., L21 & L22).

It would have been obvious to one of ordinary skill in the art to provide a pair of microstrip sections instead of a single microstrip section in the device of Konishi et al. in order to reduce the size of the filter circuit as taught by Wang (col. 1, lines 60-65).

Regarding claim 8, it should be noted that the microstrip sections 4, 5 in the device of Konishi et al. are inherently disposed on an insulating substrate and a ground layer

on the opposite side of the insulating substrate (i.e., microstrip structure). Connecting the one end of the microstrip section to a ground layer through a through-connection (e.g., via) is considered as an obvious modification since such design technique is well known in the art (see also Wang, fig. 5, microstrip section is connected to a ground SG through a through-connection XR).

Regarding claim 9, Wang (fig. 5) also discloses a coupling microstrip (port1) intersects a microstrip line (i.e., the coupling microstrip is directly connected to the microstrip line). It would have been obvious to one of ordinary skill in the art to provide a coupling microstrip between the input and a microstrip line in the modified device of Konishi et al. for direct coupling.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Konishi et al. (US '999) in view of Wang (US '538) as applied to claim 1 above, and further in view of Giraudeau et al. (US '739).

Providing an input coupling having L-shape is well known in the art (see Giraudeau et al. (fig. 2, coupling microstrip 2). It would have been obvious to one of ordinary skill in the art to use "L"-shape microstrip (i.e., first and second coupling microstrip) to couple between the input and a microstrip section of the first resonator in the modified device of Konishi et al. to obtain a desired input coupling since such coupling microstrip is well known in the art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Loukkola discloses a filter circuit having each resonator comprised of two microstrip line sections;

Petrovic discloses a filter device having a magnetically coupled resonators; and

Liang et al. (US '265, fig. 1) discloses a microstrip line disposed on a substrate and connected to a ground through a via.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (571) 272-2405. The examiner can normally be reached on Monday-Thursday, 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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A handwritten signature in black ink, consisting of stylized, overlapping loops and a long horizontal stroke extending to the right.

Seungsoek Ham
Primary Examiner
Art Unit 2817

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